

What is claimed is:

1. A bond separation inspection method comprising:
  - a step of joining together two members with an adhesive;
  - 5 a step of embedding a sensor part of an optical fiber sensor in the adhesive;
  - a step of introducing light from a light source into one end of the optical fiber sensor and causing light from the sensor part to emerge from another end of the optical fiber sensor; and
- 10 a step of detecting separation of the bond of the two members on the basis of an optical characteristic of the light from the sensor part, wherein the step of embedding the sensor part in the adhesive includes a step of causing a strain to arise in the sensor part.
- 15 2. A bond separation inspection method according to claim 1, wherein a step of causing a compressive strain in the sensor part is carried out by using a thermo-setting adhesive as the adhesive and hardening the adhesive at a temperature higher than room temperature and then returning it to room temperature.
- 20 3. A bond separation inspection method according to claim 1, wherein the optical fiber sensor is an optical fiber grating sensor.
4. A bond separation inspection method according to claim 1, wherein the light source is a broadband light source.
- 25 5. A bond separation inspection method according to claim 1, wherein the optical characteristic is an optical characteristic of reflected light reflected in the

sensor part.

6. A bond separation inspection method according to claim 1, wherein the optical characteristic is an optical characteristic of transmitted light passing through the sensor part.

7. A bond separation inspection method according to claim 5, wherein the optical characteristic of the reflected light is a spectrum characteristic of the reflected light.

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8. A bond separation inspection method according to claim 5, wherein the optical characteristic of the reflected light is a strength characteristic of the reflected light at a predetermined wavelength.

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9. A bond separation inspection method according to claim 6, wherein the optical characteristic of the transmitted light is a spectrum characteristic of the transmitted light.

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10. A bond separation inspection method according to claim 6, wherein the optical characteristic of the transmitted light is a strength characteristic of the transmitted light at a predetermined wavelength.

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11. A bond separation inspection method, comprising:

a step of joining together two members with an adhesive;

a step of embedding a sensor part of an optical fiber sensor in the adhesive;

a step of introducing light from a light source into one end of the optical

fiber sensor and causing light from the sensor part to emerge from another end of the optical fiber sensor; and

    a step of detecting separation of the bond of the two members on the basis of an optical characteristic of the light from the sensor part,

5       further comprising a step of applying a predetermined load to the two members.

12. A bond separation inspection method according to claim 11, wherein the predetermined load is a load applied to the two members in a direction such that  
10      it tends to increase any separation of the bond.

13. A bond separation inspection method according to claim 11, wherein the step of applying a load is a step of applying external forces which deform the two members elastically.

15      14. A bond separation inspection method according to claim 11, wherein the optical fiber sensor is an optical fiber grating sensor.

16      15. A bond separation inspection method according to claim 11, wherein the  
20      light source is a broadband light source.

16. A bond separation inspection method according to claim 11, wherein the optical characteristic is an optical characteristic of reflected light reflected in the sensor part.

25      17. A bond separation inspection method according to claim 11, wherein the optical characteristic is an optical characteristic of transmitted light passing

through the sensor part.

18. A bond separation inspection method according to claim 11, wherein the adhesive is a thermosetting adhesive and this thermosetting adhesive is  
5 hardened at a temperature higher than room temperature and then returned to room temperature.

19. A bond separation inspection method according to claim 11, wherein the adhesive is an adhesive that hardens at room temperature.

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20. A bond separation inspection method according to claim 16, wherein the optical characteristic of the reflected light is a spectrum characteristic of the reflected light.

15 21. A bond separation inspection method according to claim 16, wherein the optical characteristic of the reflected light is a strength characteristic of the reflected light at a predetermined wavelength.

20 22. A bond separation inspection method according to claim 17, wherein the optical characteristic of the transmitted light is a spectrum characteristic of the transmitted light.

25 23. A bond separation inspection method according to claim 17, wherein the optical characteristic of the transmitted light is a strength characteristic of the transmitted light at a predetermined wavelength.